

**PORTABLE SUPPORT APPARATUS AND METHOD**

**CROSS-REFERENCE TO RELATED APPLICATIONS**

This patent application claims priority to U.S. Provisional  
5 Patent Application No. 60/222,943, filed August 4, 2000, which  
is hereby incorporated by reference herein in its entirety.

**FIELD OF THE INVENTION**

10 The present invention relates generally to devices and  
methods for lifting and transferring persons with disabilities  
and, more particularly, to a portable support apparatus and  
method.

**BACKGROUND OF THE INVENTION**

15 Difficulties are often encountered a disabled person  
transfers from one location to another whether independently or  
assisted. Particularly in the case of wheelchair-bound persons  
or persons with severe mobility impairments, it is often quite  
difficult to lift and transfer persons to and from their  
20 wheelchair when entering or exiting a motor vehicle or in any  
other desired transfer location.

There have been some inventive efforts directed at  
alleviating the problems associated with transferring disabled  
persons from one location to another via a portable hoist-type

system. For example, U.S. Patent Nos. 4,365,924 and 5,459,891 are both directed toward devices for transferring disabled persons.

The aforementioned disclose devices which allow a disabled person to be lifted and transferred. However, the devices disclosed in these patents, as well as other known devices, have drawbacks in the areas of limited portability and modularity which could limit the potential mobility of a disabled individual.

Although several of these products can be disassembled to a certain level, none demonstrates a high level of portability nor ease-of-use.

In view of the foregoing, it would be desirable to provide a portable support apparatus for lifting and transferring devices designed to assist persons with disabilities when transferring from one location to another which overcomes the above-described inadequacies and shortcomings.

#### SUMMARY OF THE INVENTION

According to the present invention, a portable support apparatus and method is provided for assisting persons with disabilities when being lifted or transferred from one location to another. The present invention portable support apparatus has two legs pivoting about a substantially vertical axis from

the ends of a main cross member limited in their motion by two locking pins and detent holes. To each end of the legs is attached a caster assembly pivoting about a substantially vertical axis. Attached to the main cross member 19 via a hinge  
5 along a substantially horizontal axis, is a vertical support and handle assembly containing mounting pins suitable for attachment of a lifting and transfer device.

In accordance with other aspects of the present invention, the vertical support and handle can be pivoted about a hinge  
10 attached to the main cross member about a substantially horizontal axis such that the handle will align itself with recessed areas in between the casters at the end of the legs and the main supports of the legs when the legs are released by means of the leg locking pin, and adjusted to their inboard  
15 position detents. The end result of this action is to allow the user to lift the assembly by the handle without further need for adjustments or connections, and, using the casters on the opposite ends of the legs as functional wheels, easily push or pull the collapsed assembly without lifting its entire weight.

20 The offset location of the caster axle and the width of the casters permit the casters to immediately center themselves such that, when pushed, the unit will track straight.

In accordance with further aspects of the present invention, the vertical support and handle assembly incorporates

a locking blade and corresponding pin attached to the main cross member which allows for convenient release and securement of the vertical support and handle when moving from a substantially vertical orientation to a horizontal stowed position.

5        In accordance with still further aspects of the present invention, a motion-limiting device is provided which prevents articulated members of the lift system mounted on the present invention portable support apparatus from swinging too far to the right or to the left at any joint.

10        In accordance with still further aspects of the present invention, a motion-limiting device is provided which prevents a lifting and transferring apparatus mounted on the present invention portable support apparatus from swinging too far to the right or to the left.

15        In accordance with still further aspects of the present invention, an electrical interlock switch is integrated into the motion-limiting device to prevent the lift from being operated if the motion-limiting device is not properly installed.

20        The present invention will now be described in more detail with reference to exemplary embodiments thereof as shown in the appended drawings. While the present invention is described below with reference to preferred embodiments, it should be understood that the present invention is not limited thereto. Those of ordinary skill in the art having access to the

10 teachings herein will recognize additional implementations,  
modifications, and embodiments, as well as other fields of use,  
which are within the scope of the present invention as disclosed  
and claimed herein, and with respect to which the present  
5 invention could be of significant utility.

#### BRIEF DESCRIPTION OF THE DRAWINGS

10 In order to facilitate a fuller understanding of the  
present invention, reference is now made to the appended  
drawings. These drawings should not be construed as limiting  
the present invention, but are intended to be exemplary only.

15 FIG. 1 is a side view of a portable support apparatus in  
accordance with the present invention with vertical support and  
handle assembly in vertical plane.

FIG. 2 is a side view of a portable support apparatus in  
accordance with the present invention with vertical support and  
handle assembly in vertical plane, and a sample lifting and  
transferring apparatus in place on support pins.

20 FIG. 3 is a side view of a portable support apparatus in  
accordance with the present invention with vertical support and  
handle assembly in horizontal plane.

FIG. 4 is a top view of a portable support apparatus in  
accordance with the present invention with vertical support and  
handle assembly in horizontal plane with legs in outboard

position.

FIG. 5 is a top view of a portable support apparatus in accordance with the present invention with vertical support and handle assembly in horizontal plane with legs in outboard position.

FIG. 6 is a side view of a sample lifting and transferring apparatus shown in FIG. 2 with articulation joint motion limiter installed. Additionally, side and top detail views of the motion limiter are provided.

#### DETAILED DESCRIPTION OF EXEMPLARY EMBODIMENT(S)

Referring to FIGS. 1-5, there is shown a portable support apparatus 10 in accordance with the present invention in two respective positions. Beginning from the bottom of the apparatus 10 upward, the apparatus 10 includes a caster wheel assembly 12 secured to leg 16 by caster wheel assembly axle 14, which allows caster wheel assembly 12 to pivot about a substantially vertical axis. Leg 16 is secured to cross member 19 via leg axle 18, thus pivoting about a substantially vertical axis. The motion of leg 16 is limited by a combination of locking pin 20 located on cross member 19, and locating detent holes 21 (not visible, see FIG. 5).

It should be noted that the alignment of leg axle 18, leg locking pin 20 and locating detent holes 21 are such that the

position of casters 12 and legs 16 will allow entry of handle 32 into the recess between casters 12 and the legs 16. It is important to note that this alignment is the factor which allows portable support apparatus 10 to be transported in a "hand truck style" movement.

Cross member 19 is connected to upright support and handle assembly 30 via upright support hinge 22, which is oriented on a substantially horizontal axis, allowing upright support and handle assembly 30 to pivot along a substantially vertical plane, with sufficient range of motion to rotate from a substantially vertical orientation in which locking pin 26 may engage into locking blade 28 to a position below the plane of legs 16. Lift support pin assembly 34 is securely fastened to vertical support and handle 30 for purposes of supporting a variety of lifting and transferring apparatuses 11, such as for example the lifting and transferring apparatus disclosed in U.S. Patent No. 6,042,330. It should be noted that lift support pin assembly 34 comprises a motion-limiting collar which prevents lifting and transferring apparatus 11 from undesirable sideward rotation and, thus, risk of tipping when the lift rotates to such position that the load center is outside the support base of portable support apparatus 10.

Referring to FIG. 6, there is shown a lifting apparatus joint motion limiter 36 with lifting apparatus joint motion

limiter interlock switch 37, incorporating top and side view  
detail drawings. Lifting apparatus joint motion limiter 36 can  
take a variety of forms, depending on the lifting apparatus  
being used in conjunction with portable support 10, however it  
5 will in all cases be inserted between two components of any  
articulation of the lifting and transferring apparatus in  
question in such manner as to immobilize the joint into which it  
is inserted by means of a combination of tongues and/or receiver  
channels into which the articulated elements of the lifting and  
10 transferring apparatus can be placed.

It should be additionally noted that lifting apparatus  
joint motion limiter interlock switch 37 is positioned to rest  
against components of lifting and transferring apparatus 11 only  
when placed in a proper and secure position to reliably  
15 immobilize the motion of the joint or joints it is designed to  
limit. Lifting apparatus joint motion limiter interlock switch  
37 provides a de-activation signal to power supply such that  
power would be cut off in case of improper placement of lifting  
apparatus joint motion limiter 36, thus providing an important  
20 safety measure for portable support apparatus 10.

The present invention is not to be limited in scope by the  
specific embodiments described herein. Indeed, various  
modifications of the present invention, in addition to those  
described herein will be apparent to those of skill in the art



from the foregoing description and accompanying drawings. Thus, such modifications are intended to fall within the scope of the appended claims.